

THURSDAY, NOVEMBER 12, 1908.

A HISTORY OF THE EARTH.

Geschichte der Erde und des Lebens. By J. Walther. Pp. iv+570; with 353 illustrations. (Leipzig: Von Veit and Co., 1908.) Price 14 marks.

PROF. WALTHER'S history of the earth and of life has been written with that combined knowledge of physical geography, stratigraphy, astronomy, and biology which we have learnt to expect from the author's previous writings. He tells the story of the earth in a series of chapters which have the interest of essays instead of the compressed information of a text-book, and are rich in fresh observations made by the author or culled from recent technical literature. The volume is remarkably well illustrated. One feature of the illustrations is the abundance of drawings showing extinct animals reproduced as in life. There are also numerous pictures of ideal landscapes and seascapes, drawn in accordance with most recent knowledge. Such, for example, is the terrifying picture of *Coccoosteus decipiens*, by Rudloff, after a reproduction by Jaeckel, the beauty competition between Rhamphorhynchus and Archæopteryx on the shores of the Solenhofen lagoon, and the race between two flying Pteranodons, which, as they had a body weighing only 15 kilograms to a wing span of 18 feet, resemble a modern aeroplane with its small motor and vast sails. The views include pictures of life on the sea floor in two epochs of the Cambrian period, and one of a Calamite forest in the Carboniferous, by Rudloff, from designs by Walther. The illustration of Dinornis is, however, somewhat out of date, as the bird's title to its specific name of maximus is due more to the artist than to nature.

The book begins with a series of chapters on the physics of the earth, which the author describes as composed of five zones. For the central mass he adopts the name of pyrosphere, and to the zones usually accepted he adds the biosphere, which he separates from the underlying lithosphere, owing to the wide area occupied by coral limestones and forests. The author then discusses the relations of the earth to other heavenly bodies, and he enters a welcome and emphatic protest against the continuance of describing the ring-shaped mountains of the moon as volcanoes. He, however, accepts Dr. G. K. Gilbert's theory that they are due to meteoric masses which were fused by collision with the moon and spread out as a ring around the point of impact.

We also welcome his view, which he repeats from his paper of 1903, that the development of the deep oceanic basins began at the close of Palæozoic times, so that the modern abyssal oozes are not to be expected in the Palæozoic rocks. The book includes a map showing the supposed wanderings of the North Pole, and discusses the shifting of the pole as the possible cause of climatic changes; the fact is admitted, however, that this movement of the pole has not been proved for any geological period.

The author also refers to various attempts to

express geological time in years, and in this matter does not seem very hopeful of satisfactory results. He quotes estimates of the age of the earth, from the 20 million years of Lord Kelvin to the 100 to 180 million estimate of Sir Archibald Geikie. He caricatures one line of argument by remarking that because one man can build a wall in 100 hours, it does not follow that 360,000 builders could build the same wall in one second. He gives a photograph of a lump of coral 8 centimetres high, which had grown in four years on a telegraph cable, and he argues therefrom that a layer of coral limestone 600 metres thick could have been deposited in 30,000 years, an unconvincing argument, owing to the difference in texture between a branching coral and a massive coral rock.

The section of the work devoted to stratigraphical geology the author calls "Bathrologie," which describes each geological system in reference to its most striking geographical character, such as the great northland of the Old Red Sandstone, the *Productus* Sea of the Carboniferous, the continent of Gondwanaland, the Triassic Sea and its struggle with the northern deserts, the Jurassic Sea, &c.

In his geological classification the author adopts one view which will probably not meet with general acceptance, for he groups together the Algonkian and the Cambrian as one group, the Urzeit; the systems from the Silurian to the Permian inclusive he calls the Alt-zeit. Considering the great unconformity and complete palæontological difference between the Algonkian and the Cambrian, and the uncertainty as to the dividing-line between the Cambrian and the Ordovician, the separation of the Cambrian from the rest of the Palæozoic is unnecessary.

In his interesting chapter on prehistoric man the author figures some eoliths from the Miocene; he regards these stones as showing artificial workmanship, and remarks that they have not been found associated with broken bones or any other signs of the contemporary existence of man. The author is probably only logical in his conclusion that, if the eoliths are of human origin, then the age of man must be extended back at least to the Miocene, and probably to even much earlier geological periods.

One mistake may be noted, as it has occurred in other text-books. On p. 132 it is stated that the Pink and White Terraces of New Zealand were destroyed by an earthquake, whereas they were blown to fragments by a volcanic explosion that left a vast crater deep below their site.

J. W. G.

SCIENCE AND THE DAILY PRESS.

From an Easy Chair. By Sir E. Ray Lankester, K.C.B., F.R.S. Pp. viii+144. (London: A. Constable and Co., Ltd., 1908.) Price 1s. net.

SCIENCE renders the people a three-fold service. The increase in material comfort and in facility of communication which have resulted from ability to direct the forces of nature have been sufficiently proclaimed by public speakers and acclaimed by their hearers. It is less clear that the public recognise the

C

more important service rendered by the army of trained men of science, which wages ceaseless war against pestilence, flood, and famine. The scouts of this army penetrate the unknown, under conditions making no small demands on their courage, and render possible the advance of humanity. But even if sufficient regard be paid by the ordinary intelligent citizen to the material service done him by science, it can hardly be denied that he has no conception of his indebtedness on the intellectual and moral side. Yet scientific method, whenever and wherever made welcome, has imparted greater freedom and clearness of thought, has widened imagination and sympathy, and has led to a truer perception of life and character based upon concepts of law and order. Nor need we regard as a small matter the sum of intellectual enjoyment and stimulus derived from the progress of discovery. This progress would be quickened if the people met the demand of science for intelligent sympathy with its aims and methods; for active and liberal support of investigation; for national and personal action in respectful accord with the results established by investigators accredited by their fellow-workers.

But even the material benefits can be reaped to the full only by a nation prepared to recognise the truth expressed on p. 29 of Sir Ray Lankester's book:—

"Science is no handmaiden, but in reality the master—the master who must be obeyed. The sooner and the more thoroughly the people of this country recognise this fact, and insist upon its acceptance in practice by their representatives and governors, the better for them and their posterity."

To the present writer it appears that our fitness to remain at the head of a great empire depends upon our power to "recognise this fact."

Have we this power to-day? We have not; we must seek it through the intelligent sympathy of the people. The publication of this little book suggests one means—a powerful one—to our end, viz. the publication in the daily newspapers of information and articles of a truly scientific character. These articles or notes must be written by men of wide scientific knowledge and high attainments, in order that they may be accurate and reflect truly the aims, methods and results of scientific work.

In his preface Sir Ray Lankester explains that his book is a reproduction of articles which appeared in the *Daily Telegraph* from October, 1907, to April, 1908. The author's style is clear and animated, well adapted to arrest and hold the attention of the newspaper reader. The articles relating to tropical diseases, the public estimate of the value of science, heredity, ignorance, and vivisection display a power and earnestness suited to their themes. The lighter articles convey a considerable amount of information in a chatty, reminiscent style, interspersed with biographical detail. The bit of autobiography on p. 59 is a charmingly told illustration of the experimental method. When discussing votes for women our author is less illuminating, and is perhaps as likely to make opponents as converts. We are glad that he did not confine himself to biological subjects. He

concludes an effective short statement of the problems connected with the orientation of ancient temples by a remark on Stonehenge which will be echoed by readers of NATURE:—

"The delay in examining everything on the spot and in making all that remains absolutely secure is a national disgrace."

We hope that the present volume will have many successors.

With the exception of Sir Ray Lankester's work and certain technical articles, the "scientific" paragraphs which we have read in the daily Press are far from reaching the standard which we have already indicated (or the standard reached, e.g., in the case of musical criticism). Too frequently they fall to the level of burlesque absurdity—stuff which no editor would dream of publishing as serious information in regard to any other department of news. In addition to hearing the professor talk "from an easy chair," we want accurate statements of recent advances, as clear and simple as possible, relying for interest on intrinsic importance and not on "popular" dressing and sensationalism. Nor would such "news from the front" of the progress of our scientific army lack appreciative readers. The spread of scientific teaching in our schools and universities, the existence of fifty thousand members of our polytechnics, and, above all, the attention to scientific inventions which is a necessity to organisers of commercial and industrial undertakings—these guarantee the existence of a reading public able to appreciate such scientific information. Surely the time is ripe for the editors of our "dailies" to take science seriously. To find and harness a Huxley and a Helmholtz may be beyond editorial power, but it is within that power to employ men of high scientific training and to require from them contributions of first-rate quality. By so doing they would give an impulse to national progress in science.

G. F. D.

THE GREAT PYRAMID.

The Great Pyramid of Gizeh; its Riddle Read, its Secret Metrology Fully Revealed as the Origin of British Measures. By M. W. H. Lombe Brooke. Pp. 217. (London: Banks and Son, 1908.) Price 7s. 6d. net.

THE mind of the gnostic is ever with us; it delights in founding the most far-reaching statements upon a basis of facts and dogmas which may or may not be true, but the relevance of which to the conclusion escapes the ordinary intellect. In this volume of 217 pages we have some fresh theories based on older ones about the Great Pyramid, but with a wide departure in results from those of the earlier theorists. Whatever we may conclude about the theoretical results of the late Prof. Piazzi Smyth, we all know that he was able to handle his material in a scientific fashion. This is far from the case in the present volume.

As examples of method we have (p. 29) a story of most extreme irregularity—a natural boulder surface—stated to nine places of figures in its cubic